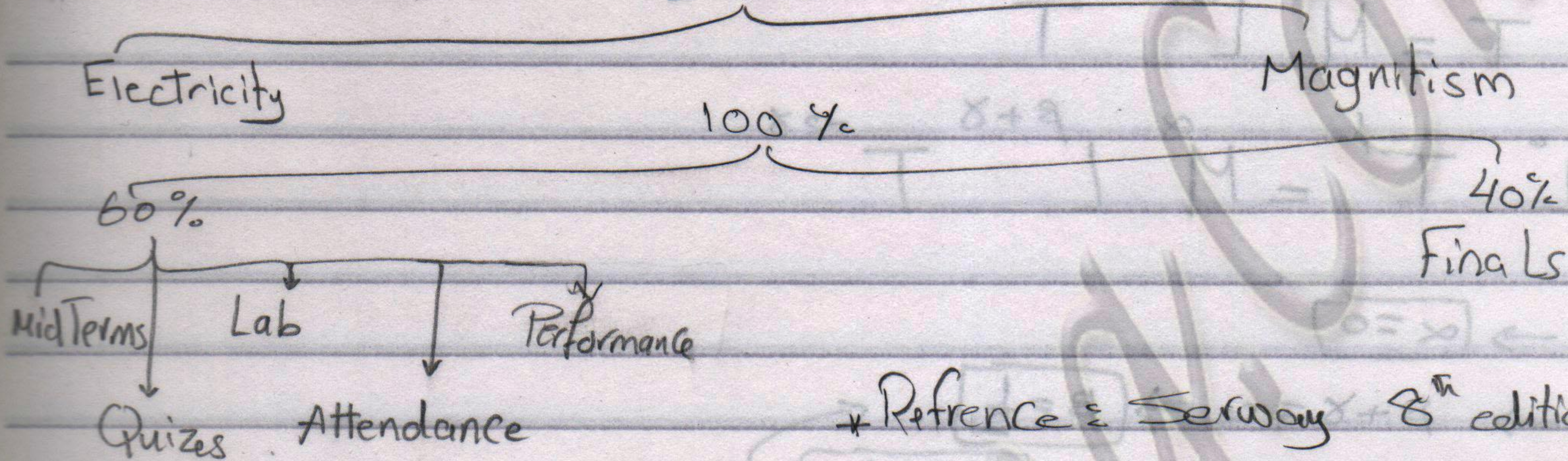


Lecture [1]

FB Group: ASU, FE, CHEP, Freshmen, EPHS 121, Spring 2013

Moh. Dr. M. ELBANNA

EPHS 121



Units and Dimensions.

$v = \frac{s}{t}$ m/s			
	S.I. Units	Dimension	C.G.S
S distance	m	L	cm
m mass	kg	M	gm
L t Time	s	T	s

$$* F = ma = m \frac{v}{t} = m \frac{s}{t^2}$$

unit: $kg \cdot m/s^2$

Dimension: $M \cdot L \cdot T^{-2}$

MLT^{-2}

Remember: Energy, work, Torque = FS

* Another Important for Dimins: Check the correctness of the Equation

$$x = v_0 t + \frac{1}{2} a t^2$$

$$L = L \cdot T^{-1} T + L T^{-2} T^2$$

∴ This Eq. is not True

* Dimensional Analysis:

if t depends on (m, L, g)

$$t = k m^a L^b g^c$$



$$t = k m^\alpha l^\beta g^\gamma$$

$$T = M^\alpha L^\beta (LT^{-2})^\gamma$$

$$T = M^\alpha L^{\beta+\gamma} T^{-2\gamma}$$

$$M^0 L^0 T^1 = M^\alpha L^{\beta+\gamma} T^{-2\gamma}$$

$$\rightarrow M \rightarrow \boxed{\alpha = 0}$$

$$L \rightarrow \beta + \gamma = 0 \Rightarrow \boxed{\beta = \frac{1}{2}}$$

$$T \rightarrow -2\gamma = 1 \Rightarrow \boxed{\gamma = -\frac{1}{2}}$$

$$t = k m^0 l^{\frac{1}{2}} g^{-\frac{1}{2}}$$

$$\boxed{t = k \sqrt{l/g}}$$

Know that from fund.

Q } change

Θ } Temp